

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Currently Amended)** A transmitter optical assembly comprising:

 an integrated circuit comprising:

 a transmitter substrate that includes a power line and a conductive path;

 a laser source mounted on the transmitter substrate; and

 a laser control mounted on the transmitter substrate, the laser control
 communicably connected with one or more of the laser source, the power
 line, and the conductive path, the laser control comprising a memory
 portion, the memory portion including one or more memory components
 for receiving or storing data.
2. **(Original)** The transmitter optical assembly as recited in claim 1, wherein the laser
control further comprises a laser modulator, the laser modulator administering an alternating
current from the laser control to the laser source; and a laser bias, the laser bias administering a
direct current from the laser control to the laser source.
3. **(Original)** The transmitter optical assembly as recited in claim 1, wherein the
transmitter substrate further comprises connections for one or more of a ground line, a diagnostic
data line, and a diagnostic clock.

4. **(Original)** The transmitter optical assembly as recited in claim 1, wherein the conductive path is a transmission line that carries data from the host to the optical assembly, wherein the data are ultimately transmitted at the laser source.
5. **(Original)** The transmitter optical assembly as recited in claim 1, wherein the transmitter substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.
6. **(Original)** The transmitter optical assembly as recited in claim 1, further comprising a monitor photodiode, the monitor photodiode communicably connected with the laser source and the laser control, the monitor photodiode providing the laser control with status information about the laser source.
7. **(Original)** The transmitter optical assembly as recited in claim 1, wherein the memory portion comprises one or more of an EEPROM, and a RAM.
8. **(Original)** The transmitter optical assembly as recited in claim 7, wherein at least one of the one or more memory components includes a portion that stores one or more of status and fault information, and operating temperature information.
9. **(Original)** The transmitter optical assembly as recited in claim 7, wherein at least one of the one or more memory components includes a portion for receiving diagnostic data.

10. **(Currently Amended)** A receiver optical assembly comprising:
- an integrated circuit comprising:
- a receiver substrate that includes a power line and a conductive path;
 - a photodiode mounted on the receiver substrate;
 - an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal;
 - and
 - a processing control mounted on the receiver substrate, the processing control communicably connected with one or more of the photodiode, the power line, and the conductive path, the processing control comprising a memory portion, the memory portion comprising one or more memory components for receiving or storing data.
11. **(Original)** The receiver optical assembly as recited in claim 10, wherein the processing control further comprises a temperature sensor.
12. **(Original)** The receiver optical assembly as recited in claim 10, wherein the optical converter is an avalanche photo-diode, the receiver optical assembly further comprising a bias control mounted on the receiver substrate, the bias control communicatively connected with the optical converter, and the processing control.
13. **(Original)** The receiver optical assembly as recited in claim 10, wherein the conductive path is a data receiving line that carries data from the receiver optical assembly to the host.

14. **(Original)** The receiver optical assembly as recited in claim 10, wherein the receiver substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.

15. **(Original)** The receiver optical assembly as recited in claim 10, wherein at least one of the one or more memory components comprise one of an EEPROM, and a RAM.

16. **(Original)** The receiver optical assembly as recited in claim 15, wherein at least one of the one or more memory components includes a portion for receiving and storing diagnostic data.

17. **(Original)** The receiver optical assembly as recited in claim 16, wherein the receiver substrate further comprises connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.

18. **(Currently Amended)** A combination optical assembly comprising:
an integrated circuit comprising:
- a combination transmitter/receiver substrate that includes a power line and a conductive path;
 - a photodiode mounted on the combination substrate, the photodiode configured to receive an optical signal from a fiber optic network;
 - a laser source mounted on the combination substrate, the laser source configured to provide an optical signal to a fiber optic network;
 - a processing control mounted on the combination substrate, the processing control communicably connected with the laser source, the control comprising a memory portion, the memory portion including one or more memory components for receiving or storing data.
19. **(Original)** The combination optical assembly as recited in claim 18, further comprising an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal.
20. **(Currently Amended)** The combination optical assembly as recited in claim 18, further comprising a transimpedance amplifier, wherein the processing control is further communicably connected with the transimpedance amplifier, the power line, and the conductive path.
21. **(Original)** The combination optical assembly as recited in claim 18, wherein the processing control further comprises a postamp.

22. **(Original)** The combination optical assembly as recited in claim 18, wherein the processing control further comprises a laser modulator, the laser modulator administering an alternating current from the laser control to the laser source.
23. **(Original)** The combination optical assembly as recited in claim 18, wherein the processing control further comprises a laser bias, the laser bias administering a direct current from the laser control to the laser source.
24. **(Original)** The combination optical assembly as recited in claim 18, wherein the optical converter is an avalanche photo-diode, the combination optical assembly further comprising a bias control mounted on the combination substrate, the bias control communicatively connected with the optical converter, and the processing control.
25. **(Original)** The combination optical assembly as recited in claim 18, wherein at least one of the one or more memory components comprises one of an EEPROM, and a RAM.
26. **(Original)** The combination optical assembly as recited in claim 25, wherein at least one of the one or more memory components is configured for receiving and storing diagnostic data.
27. **(Original)** The combination optical assembly as recited in claim 26, wherein the combination substrate further comprises connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.
28. **(Currently Amended)** The combination optical assembly as recited in claim 27, wherein the diagnostic data is communicated to the processing control from the host ~~via an~~ I2C or MDIO circuitry.

29. **(Original)** The combination optical assembly as recited in claim 26, wherein the combination substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.

30. **(Currently Amended)** An optical transceiver comprising a fiber optic subassembly operably attached to the optical transceiver, the fiber optic subassembly comprising:

an integrated circuit comprising:

at least one of a transmitter[,] and/or a receiver[.]; and

a combination transmitter/receiver substrate including a power line and a
conductive path; and

data means operably disposed within the fiber optic subassembly for
communicating high frequency optical data, wherein the means for
communicating optical data includes one or more conventional optical
transceiver components within the fiber optic subassembly incorporated in
a common integrated circuit, such that impedance that would otherwise be
present in a high frequency electronic data communication is minimized
due to the integration of the transceiver components in a common
integrated circuit.

31. **(Original)** The optical transceiver as recited in claim 30, wherein the means operably disposed within the fiber optic subassembly for communicating high frequency optical data comprises:

a photodiode mounted on the combination substrate, the photodiode configured to receive
an optical signal from a fiber optic network;

a laser source mounted on the combination substrate, the laser source configured to
provide an optical signal to a fiber optic network;

a processing control mounted on the combination substrate, the processing control communicably connected with the laser source, the control comprising a memory portion, the memory portion including one or more memory components for receiving or storing data.

32. (New) The transmitter optical integrated circuit as recited in claim 1, wherein the laser control is connected directly to the laser source.

33. (New) The transmitter optical integrated circuit as recited in claim 1, further comprising a bond wire directly connecting the laser control to the laser source.

34. (New) The receiver optical integrated circuit as recited in claim 10, wherein the processing control is directly connected to the photodetector.

35. (New) The receiver optical integrated circuit as recited in claim 10, further comprising a transimpedance amplifier and a bond wire, wherein the photo detector is directly connected to the transimpedance amplifier or processing control by the bond wire.

36. **(New)** An integrated circuit comprising:

an integrated circuit substrate that includes a power line and a conductive path;

a laser driver comprising a current source for driving a laser or a post amplifier for amplifying a signal received from a photodetector; and

control circuitry including laser control or processing control, the control circuitry mounted on the integrated circuit substrate, the control circuitry directly connected to the laser source or photodiode, the control circuitry including a memory portion, the memory portion including one or more memory components for receiving or storing data.

37. **(New)** The integrated circuit as recited in claim 34, wherein the control circuitry further includes a transimpedance amplifier.

38. **(New)** The integrated circuit as recited in claim 34, wherein the integrated circuit comprises a laser source and a photodiode, and wherein the control circuitry is directly connected to the laser source and the photodiode.

39. **(New)** A system comprising:

a host comprising:

a host central processing unit;

a transmitter optical assembly connection; and

a receiver optical assembly connection;

a transmitter optical assembly connected to the transmitter optical assembly connection,
the transmitter optical assembly comprising:

a receiver integrated circuit comprising:

a transmitter substrate that includes a power line and a conductive
path;

a laser source mounted on the transmitter substrate; and

a laser control mounted on the transmitter substrate, the laser
control communicably connected with one or more of the
laser source, the power line, and the conductive path, the
laser control comprising a memory portion, the memory
portion including one or more memory components for
receiving or storing data; and

a receiver optical assembly connected to the receiver optical assembly connection, the
receiver optical assembly comprising:

a transmitter integrated circuit comprising:

a receiver substrate that includes a power line and a conductive path;

a photodiode mounted on the receiver substrate;

an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal; and

a processing control mounted on the receiver substrate, the processing control communicably connected with one or more of the photodiode, the power line, and the conductive path, the processing control comprising a memory portion, the memory portion comprising one or more memory components for receiving or storing data.